



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

## Agenda

- Introduction
- Evaluation Performance Measures and Indicators
- Development Process and Activities
- Performance Measure Report Format

## SOUTH FLORIDA WATER MANAGEMENT DISTRICT

## Kissimmee Basin Water Management is Complex

- Original C&SF system (flood control)
- Kissimmee River Restoration Project
- Lake drawdowns for habitat enhancement
- Nuisance aquatic vegetation - Hydrilla
- Endangered species - Snail kites
- > 25 years since last comprehensive revision of operating rules

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## Operating Objectives

**Flood Control****Natural Resources  
Requirements of the  
KRRP and KCOL****Water Supply****Downstream Ecosystem  
Requirements  
(Lake Okeechobee)****Aquatic Plant  
Management**

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## **Current Operations**

- Maintain the existing level of flood control
- Meet some but not all requirements of the Kissimmee River Restoration Project
- Accommodate
  - Habitat enhancement projects
  - Whole-lake hydrilla management
- Meet existing permitted consumptive uses

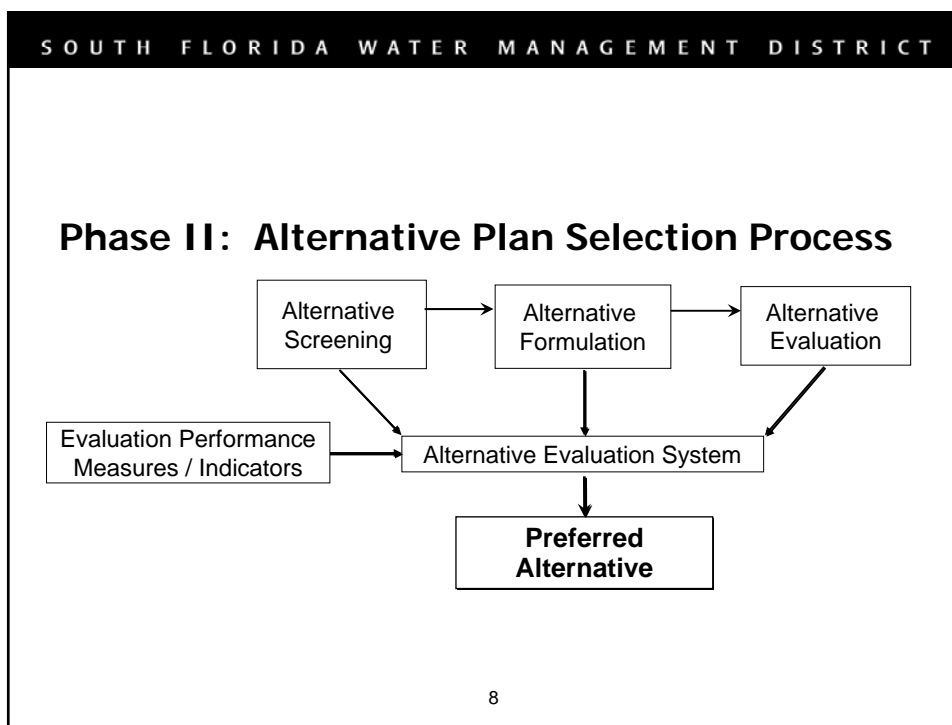
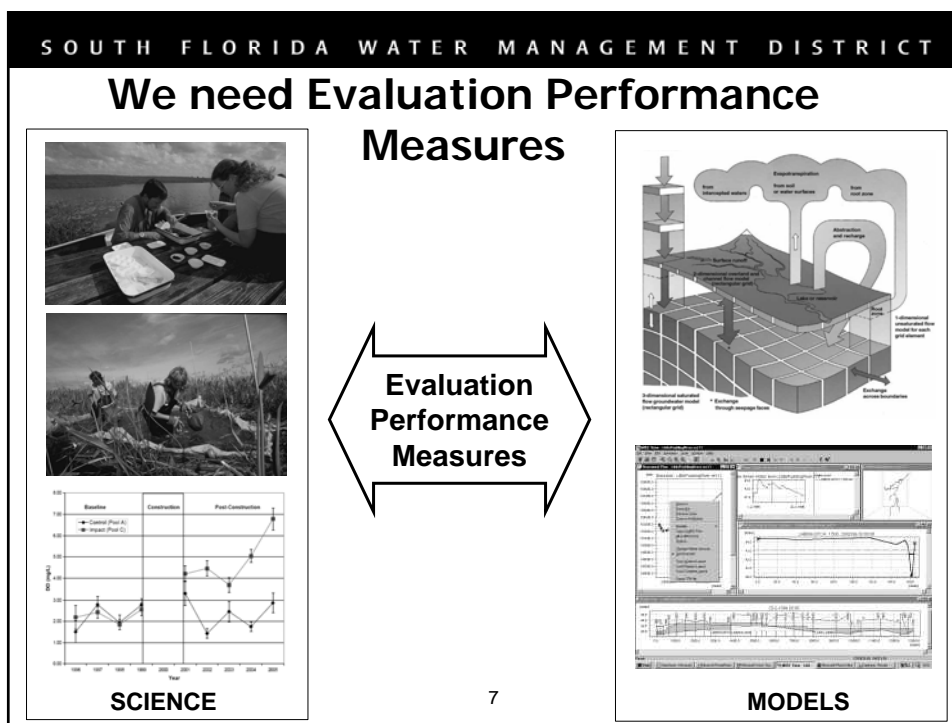
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## **Future Proposed Operations**

- Maintain the existing level of flood control
- Meet the requirements of the Kissimmee River Restoration Project
- Address the complex hydrologic requirements of the basin's natural resources
- Provide opportunities for whole-lake hydrilla treatment
- Minimize impacts to Lake Okeechobee

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## What are Evaluation Performance Measures?

- Quantitative planning tools that describe desired attributes or conditions relative to a specific target
- Used to predict which alternative plans are likely to meet specific objectives
- Compatible with hydrologic and hydraulic modeling tools
  - Expressed in hydrologic terms
- Composed of multiple components
- Reflect what stakeholders consider to be desirable conditions



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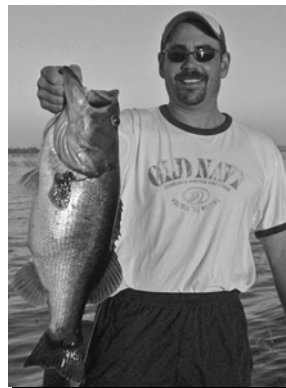
## What are Evaluation Performance Indicators?

- No specific target.
- Provide **qualitative** information.
- Used to provide an indication of the relative behavior of alternatives.

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## Desirable Conditions



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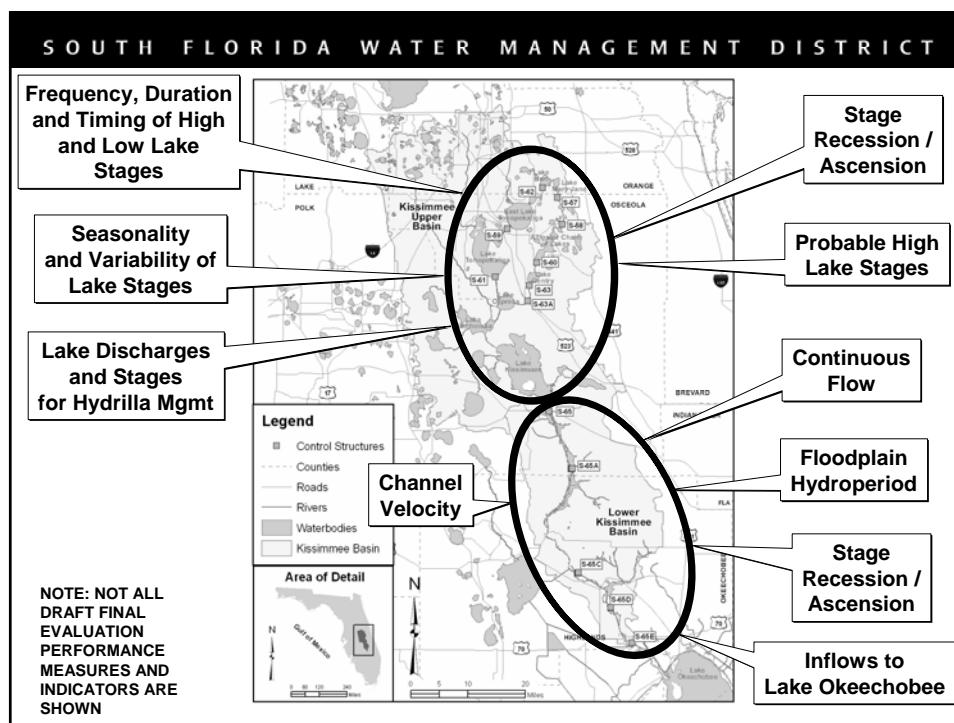


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## Desirable Conditions



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## Draft Final Evaluation Performance Measures

No.	Name	Peer Review Priority	
		High	Low
E-01	Kissimmee River Continuous Flow	X	
E-02	Seasonality and Variability of Kissimmee River Flow	X	
E-03	Kissimmee River Stage Hydrograph / Floodplain Hydroperiod	X	
E-04	Kissimmee River Stage Recession / Ascension	X	
E-05	Kissimmee River Channel Velocity	X	
E-06	Kissimmee River Energy Grade Line		X
E-07	Kissimmee River Probable Flood Extents		X
E-08	Flow Duration	X	
E-10	Probable High Lake Stages		X
E-11	Seasonality and Variability of Lake Stages	X	
E-12	Frequency, Duration and Timing of High and Low Lake Stages	X	
E-13	Lake Stage Recession / Ascension	X	

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## Draft Final Evaluation Performance Indicators

No.	Name	Peer Review Priority	
		High	Low
E-09	Stage Duration for Navigation and Recreation		X
E-14	Lake Littoral Zone Inundation		X
E-15	Sub-watershed Runoff Volume		X
E-16	Water Supply for Consumptive Use		X
E-17	Lake Discharges and Stages for Hydrilla Management		X
E-18	Kissimmee River Inflows to Lake Okeechobee		X
E-19	Palustrine Wetland Hydroperiod / Surficial Aquifer Water Budget		X

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## Peer Review Priority

- Focus is on Evaluation Performance Measures that represent natural resources requirements because:
  - They are the most complex
  - Have been identified by stakeholders as critical



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## **Evaluation Performance Measures and Indicators Define Criteria Necessary to:**

- Successfully implement the Kissimmee River Restoration Project
- Improve / enhance and/or sustain lake ecosystem health
- Maintain the existing level of flood control
- Minimize impacts to Lake Okeechobee
- Provide opportunities to perform whole-lake hydrilla management
- Determine if surface water is available for consumptive use

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## **Key Work Products Referenced**

- Kissimmee River Restoration Studies
  - Baseline report
  - Restoration Expectations
- Kissimmee Chain of Lakes Long-Term Management Plan
  - Project Charter and Management Goals
  - Life History Requirements of Candidate Indicator Species
  - Conceptual Ecosystem Model
  - Peer Review of Conceptual Ecosystem Model

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## Key Work Products (cont'd)

- Master Water Control Manual for the Kissimmee River-Lake Istokpoga Basin
- 2004 Hydrilla Management Summit Summary document
- Draft Kissimmee Basin Water Supply Plan

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## Key Assumptions

- Historic, pre-regulation conditions best describe the conditions required for a healthy lake ecosystem
- Historic, pre-channelization / reference conditions (defined in the KRR expectations) are expected to contribute to the restoration of ecological integrity.

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## Adjustments

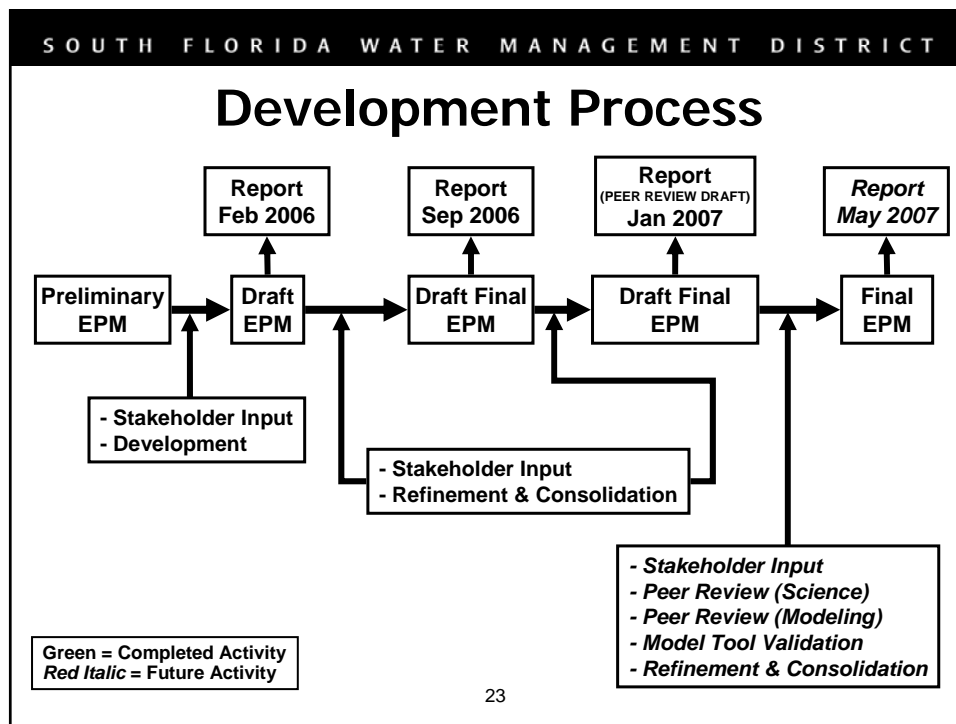
- Flood Control constraints defined by operational and structural limitations
- Ecological realities

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## How was the ecology linked to the hydrology?

- KRR and KCOL LTMP subject matter experts were asked to identify critical aspects of hydrology that affect the life history of organisms important to the river and lake systems
- Linkages are defined in the Justification and Analysis sections of the DRAFT FINAL Evaluation Performance Measures and Indicators report

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## Draft Final Evaluation Performance Measures and Indicators

January 2007

Peer Review Draft

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## Evaluation Performance Measure Format

- Expectation
- Target
- Rationale
- Operating Objective
- Evaluation Locations
- Justification and Analysis
- Uncertainty
- Source
- Evaluation Protocol
- Acceptance Status
- References

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## Expectation

- A qualitative description of desirable attributes or characteristics
- May represent a historical pre-regulation condition or some other desired condition

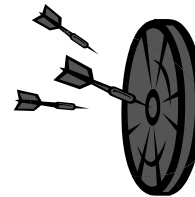
**WANTED****Desirable  
Conditions**

May represent  
historical conditions

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## Target

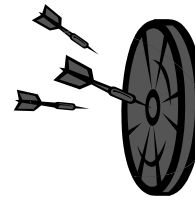
- A numeric description of the expectation
- Will be used to evaluate how well an alternative plan meets the project goals



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## Target (cont'd)

- Multiple components (and targets) are necessary to characterize and evaluate the critical aspects of hydrology.
- Components are intended to work in combination to
  - Provide comprehensive information
  - Ensure that alternative plans can be differentiated



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## Rationale

- Concisely summarizes the importance of the performance measure.
- States how the performance measure targets were developed.
- Describes the benefits associated with achieving the targets.

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## Operating Objective

- The relevant operating objective is provided.
  - Flood Control
  - Water Supply
  - Aquatic Plant Management
  - Natural Resources Requirements of the Kissimmee River Restoration Project and the Kissimmee Chain of Lakes
  - Downstream Ecosystems (Lake Okeechobee)
- Where applicable, the abiotic and biotic indicators that are anticipated to be affected are also listed.

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## Evaluation Locations

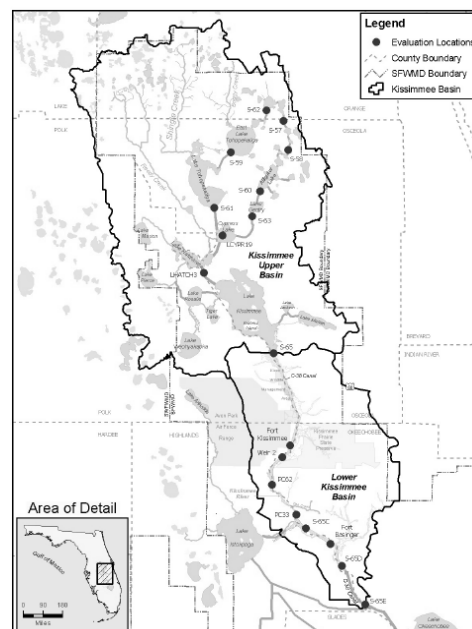
- Lists locations where the performance measure will be evaluated relative to the targets.
- Locations typically correspond to historical or existing hydrologic monitoring station locations.

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## Evaluation Locations

See Appendix A





## Justification and Analysis

- Explains why the performance measure is being developed.
- Describes the benefits associated with achieving the targets.
- Provides information on relevant studies and research.
- Includes the results of data analysis performed to derive the targets.
- Includes details related to the selection of the evaluation components and locations.

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## Uncertainty

- Description of the general uncertainty related to development of the performance measure.
- Articulates specific issues related to the assumptions made during evaluation component and target development.

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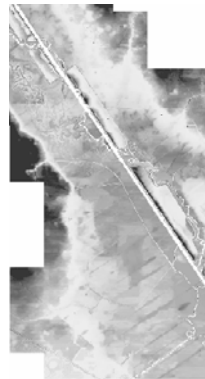
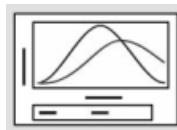
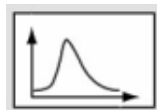
## Source

- Lists the relevant documents or activities that initiated development of the performance measure.
- May include:
  - Published documents
  - Interagency Study Team meetings
  - Personal communication with subject-matter experts

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## Evaluation Protocol

- Describes the details of the procedures and methods to be used to conduct the evaluation.

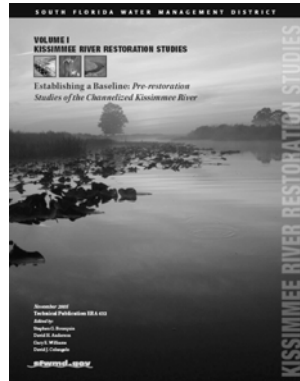


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## References

- References used to develop the evaluation performance measure are provided.



### Proceedings

#### Kissimmee River Restoration Symposium

### Sponsor

South Florida Water Management District  
Delta Court of Flags Resort • Orlando, Florida  
October 17-20, 1988

#### Kissimmee River Restoration

#### ALTERNATIVE PLAN EVALUATION & PRELIMINARY DESIGN REPORT

M. Kent Loflin  
Louis A. Toth  
Jayantha T.B. Obeyesekera

June 1990

## SOUTH FLORIDA WATER MANAGEMENT DISTRICT

## Summary

- Diverse and complex water management requirements in the Kissimmee Basin
- Development process and activities summarized
- Overview of the report format provided

